

ADAPTIVE BALLAST CONTROL ICABSTRACT OF THE DISCLOSURE

An integrated circuit for controlling a power supply circuit which delivers power to a load circuit that includes a fluorescent lamp, comprising ballast control and drive circuitry that provides drive signals to the power supply circuit, receives sense signals indicating operating conditions of at least one of the power supply circuit and the load circuit, and responds to the sense signals by modifying the drive signals; and including adaptive zero-voltage-switching and minimum-current-switching (ZVMCS) circuitry, wherein the ZVMCS circuitry senses an output of the power supply circuit, and in response thereto, controls the drive circuitry to maintain the power supply circuit under ZVMCS conditions. The power supply circuit includes a half-bridge circuit with low and high side power devices, the drive signals including low side drive signals to control the low side power device and high side drive signals to control the high side power device; the ballast control and drive circuitry including a low side drive output for providing the low side drive signals to the low side power device and a high side drive output for providing the high side drive signals to the high side power device. The ZVMCS circuit senses an output voltage and/or current at the half-bridge circuit between said high side and low side power devices at a switching time of one of the power devices, and controls the drive signals so as to maintain the output voltage and/or current near or at zero at said switching time.